

### **REMARKS**

This paper is filed in response to an Office action dated April 29, 2009. In the Office action, the abstract is objected to for informalities; multiple dependent claims 4-11 are objected to for depending on other multiple dependent claim(s); claim 3 is objected to failing to further limit the scope of the a previous claim. Regarding claim rejections, claims 1-3 are rejected (1) under 35 U.S.C. 101 as being directed to non-statutory subject matter; (2) under 35 U.S.C. 112 as being indefinite; and (3) under 35 U.S.C. 102 as being anticipated by U.S. Patent No. 5,930,154 ("Thalhammer-Reyero"). Claims 4-11 have not been considered on the merits.

By way of this Amendment, claim 1 is cancelled in favor of new independent claim 12, upon which claims 2-11 now singularly depend. Claim 12 is properly supported by paragraphs [0032]-[0038] and [0052]-[0055] of the specification. Further, the Abstract is amended to paraphrase claim 12 and paragraph [0053] is amended to correct an obvious translation error. No new matter is added. In view of the amendments and remarks submitted herewith, reconsideration and withdrawal of the aforementioned objections and rejections are respectfully requested.

### **Objections**

As amended, the Abstract is now less than 15 lines, contains no legal phraseology, and is now in narrative form. Therefore, this objection is overcome and should be withdrawn.

Further, claims 4-11 are amended to each singularly depends on claim 12; and claim 3 is amended to further limit claim 12 or claim 2, upon which it depends. As a result, the

objections under 37 C.F.R. 1.75(c) raised in the Office action is overcome and should be withdrawn as well.

**35 U.S.C. 101**

Turning to claim rejections, claims 1-3 are rejected as being directed to non-statutory subject matter, under the recent interpretations of *In re Bilski*, which requires that claims reciting a “process” must either: “(1) be tied to a particular machine, or (2) transform underlying subject matter to a different state or thing.” Here, each pending method claim relates to data representing a biological system, in which values are assigned to shape, time, and space occurrences so as to represent one or more tangible biological functional entities of the biological system. Moreover, each pending method claim further recites recursively determining the effects of changes to these values on the state of the tangible biological functional entities. Thus, data representing the tangible biological entity are modified, thereby simulating a transformation of the entities from one state to another. Further, the effects of this transformation are represented as a trajectory in the (shape, time, space) frame of reference.

Thus, the pending claims of this application are not directed to the abstract idea of representing the functions of a biological entity in a model. Rather, the claims are directed to a process in which the effects of changes in the biological entity from one state to another are determined to simulate the transformation of a biological system. Hence, the pending claims are indeed tied to a transformation of the underlying subject matters to a different state or thing, and therefore at least the second prong *Bilski* is met. Accordingly, Applicant submits that the rejected under 35 U.S.C. 101 is traversed and should be withdrawn.

### **Indefiniteness**

In the Office action, claims 1-3 are rejected for having parenthetical phrase “(their activities)” in the independent claim. By way of this Amendment, independent claim 1 is cancelled and new independent claim 12 does not include the aforementioned parenthetical phrase. Thus, this indefiniteness rejection is moot and should be withdrawn.

Moreover, claim 3 is rejected because there is insufficient antecedent basis for “said biological constituent.” As amended, claim 3 now recites “said biochemical constituent”, the antecedent basis of which can be found in independent claim 12. Therefore, this indefiniteness rejection is overcome and should be withdrawn as well.

### **Anticipation**

Finally, claims 1-3 are rejected as being allegedly anticipated by Thalhammer-Reyero. Under MPEP 2131, “[a] claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Thus, to make a proper anticipation rejection, the Examiner needs to establish that Thalhammer-Reyero teaches each and every element of the rejected claims.

Here, independent claim 12, upon which claims 2-11 depends, require the step of “representing the behavior of the biological system over time by the trajectory of the states of each data represented biological functional entity in a frame of reference consisting of shape, time, and space,” which is not disclosed in Thalhammer-Reyero. Instead, in Thalhammer-Reyero’s modeling system, “[e]ach subcomponent is defined using experimentally obtained qualitative information, such as the identification of the biological entities and processes involved, the knowledge about their localization within discrete physiological compartments

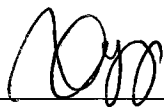
in space and time, and about the relationships and qualitative interactions between those entities” (col. 4, lines 54-60). Thus, Thalhammer-Reyero’s model is established under a frame of identification-space-time-interaction, not a triad shape-time-space frame specified in the claimed method.

Moreover, contrary to the Examiner’s assertion on page 6 of the Office action, col. 16, lines 14-18 of Thalhammer-Reyero only discusses populations of cell or molecular and the location thereof, and is therefore irrelevant to changes in space or shape. Col. 17, lines 32-61 is equally lacking as it merely relates to the importance of “temporal reasoning” and in no way teaches or suggests a triad shape-time-space frame. As a result, Thalhammer-Reyero fails to disclose each and every element of claims 2-12 and therefore the anticipation rejection is overcome and should be withdrawn.

In light of all the foregoing, Applicant respectfully submits that each of the currently pending claims is in a condition for allowance and respectfully solicits same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned agent.

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Respectfully submitted,

By   
Xiaofan Yang  
Registration No.: 61,459  
MILLER, MATTHIAS & HULL  
One North Franklin Street  
Suite 2350  
Chicago, Illinois 60606  
(312) 977-9902  
Agent for Applicant